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Docket No.: KCC-16,208

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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| Appellants: | Lawrence Howell SAWYER, et al. | | |
| Serial No.: | 09/939,061 | Group No.: | 3761 |
| Filing Date: | 24 August 2001 | Examiner: | C. Anderson |
| Title: | THIN, HIGH CAPACITY ABSORBENT STRUCTURE AND METHOD FOR PRODUCING SAME | | |

Customer No. 35844

Confirmation No. 1730

**APPEAL BRIEF UNDER 37 CFR 41.37**

Mail Stop Appeal Brief - Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Appellants herewith file their Appeal Brief in the above-identified case, pursuant to their Notice of Appeal filed 16 November 2005.

1. REAL PARTY IN INTEREST

The real party in interest is Kimberly-Clark Worldwide, Inc., the assignee of the present application (as recorded at reel 012544, frame 0468).

I hereby certify that this correspondence (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Appeal Brief - Patents, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 on

January 12, 2006

1/12/06
Date

Signature

2. RELATED APPEALS AND INTERFERENCES

Appellants are not aware of any related appeals or interferences with regard to the present application.

3. STATUS OF CLAIMS

Claims 1-39, 57, 58, 60, 61, and 63 are pending in the application. The present Appeal is directed to Claims 1-39, 57, 58, 60, 61, and 63, which were finally rejected in an Office Action mailed 19 August 2005.

4. STATUS OF AMENDMENTS

No amendment to the claims was filed subsequent to the most recent final rejection.

5. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is directed to a thin, flexible, high capacity absorbent pad 20. (Page 11, lines 17-18; Fig. 1). The absorbent pad 20 includes a single, densified layer with between 30 and 85 wt% superabsorbent material and between 15 and 70 wt% pulp fluff. (Page 13, lines 6-9 and 13-18; Fig. 1). The superabsorbent material and the pulp fluff may be homogeneously mixed. (Page 12, lines 15-16). The single-layer absorbent pad 20 has been compacted to a density greater than about 0.28 grams per cubic centimeter, or greater than about 0.30 grams per cubic centimeter, and a thickness in a range of between 0.5 and 3.0 millimeters. (Page 13, lines 13-18). The single-layer absorbent pad 20 also has an edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression. (Page 27, line 21 - page 28, line 1; page 36, lines 15-21; page 42, line 1 - page 43, line 13; and Table 4 on page 37). The single-layer absorbent pad 20 may also have an absorbent capacity between about 14 and 40 grams 0.9 w/v% saline solution per gram of absorbent pad. (Page 14, lines 3-5). The superabsorbent material may form a gradient within the absorbent pad 20. (Page 12, line 18 - page 13, line 5).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1) Claims 1-11, 15-30, 34-36, 58, 60, 61, and 63 stand rejected under 35 U.S.C. 102(b) as being anticipated by *Laux et al.* (U.S. Patent No. 5,827,259).

2) Claims 12-14 and 31-33 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Laux et al.* (U.S. Patent No. 5,827,259) as applied to Claims 1 and 21 above, and further in view of *Coles* (U.S. Patent No. 5,722,967).

3) Claims 37-39 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Laux et al.* (U.S. Patent No. 5,827,259) as applied to Claim 21 above.

4) Claim 57 stands rejected under 35 U.S.C. 103(a) as being unpatentable over *Laux et al.* (U.S. Patent No. 5,827,259) as applied to Claim 1 above, and further in view of *Pieniak et al.* (U.S. Patent No. 5,451,442).

7. ARGUMENT

**I. Claims 1-11, 15-30, 34-36, 58, 60, 61, and 63 are not anticipated by *Laux et al.* under 35 U.S.C. 102(b).**

In the final Office Action, mailed 19 August 2005, the Examiner rejected Claims 1-11, 15-30, 34-36, 58, 60, 61, and 63 under 35 U.S.C. 102(b) as being anticipated by *Laux et al.*

*Laux et al.* fail to disclose each and every element or limitation of Appellants' independent Claims 1 or 21. Appellants' invention as recited in independent Claims 1 and 21 requires a single, ***densified*** layer of superabsorbent material and pulp fluff, wherein the densification or compaction of the absorbent pad results in a density greater than about 0.28 or 0.30 grams per cubic centimeter and a thickness in a range of between 0.5 and 3.0 millimeters, and the densified layer has an edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression.

*Laux et al.* fail to disclose ***any*** densification of an absorbent pad. Furthermore, *Laux et al.* fail to disclose an absorbent pad that has been densified or compacted to a density greater than about 0.28 or 0.30 grams per cubic centimeter,

and to a thickness in a range of between 0.5 and 3.0 millimeters. *Laux et al.* also fail to disclose an absorbent pad having an edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression.

*Laux et al.* state that the density of the absorbent pad (i.e., the retention portion 48) can be calculated from its basis weight and thickness. The average composite basis weight of the absorbent pad 48 can be within the range of about 400-900 gsm. The absorbent pad 48 can be configured with a bulk thickness that is not more than about 0.6 cm (6 mm). At a basis weight of 400 gsm and a thickness of 6 mm, the density of the absorbent pad in *Laux et al.* is only 0.07 grams per cubic centimeter. Even at its maximum basis weight of 900 gsm and at a thickness of 5 mm, the density of the absorbent pad in *Laux et al.* is only 0.18 grams per cubic centimeter, which is still far below Appellants' recited density of greater than about 0.28 or greater than about 0.30 grams per cubic centimeter for the densified absorbent pad.

Furthermore, as explained in the present application, **Appellants' absorbent pad leaves the forming chamber 28 at a low density, namely less than 0.1 grams per cubic centimeter, and must be densified (Page 27, lines 9-10). Thus, the densification of Appellants' absorbent pad is a deliberate process step that is performed during the pad-forming process.** *Laux et al.* clearly fail to disclose ***any*** densification or compression that can increase the density from 0.1 grams per cubic centimeter to greater than about 0.28 or 0.30 grams per cubic centimeter.

As provided in MPEP §2113:

> The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where ***the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product.*** (emphasis added)

Even if the same superabsorbent material and pulp fluff were used to form both the *Laux et al.* absorbent pad and Appellants' claimed absorbent pad, the absorbent pad in Appellants' invention would still differ markedly from the *Laux et*

*al.* absorbent pad ***because*** of the densification. More particularly, the densification of the absorbent pad results in the balanced thinness, flexibility, and absorbent capacity recited in Appellants' claimed invention. Thus, this densification step imparts a distinctive structural characteristic to Appellants' final product.

The densification in Appellants' invention can be accomplished with a conventional compaction roll or with a heated nip, for example. Humidification of the composite may improve densification and help provide lower edge compression or stiffness values. Use of an embossing pattern may also reduce stiffness. (Page 7, lines 11-16). Thus, Appellants' absorbent pad is purposely treated (i.e., through densification) to reduce the stiffness, which can be quantified in terms of edge compression.

As explained at page 4, line 21 – page 5, line 6, of the present application, it is difficult to achieve thin absorbent composites that also have sufficient absorbent capacity and flexibility. Appellants' claimed absorbent pad achieves this delicate balance of thinness, flexibility, and absorbent capacity.

Often when pads are densified to create high capacity in a thin form, the resulting pads are stiff. *Laux et al.* disclose neither any densification (as required in Appellants' absorbent pad) nor any flexibility of the absorbent pad 48 (as also required in Appellants' absorbent pad).

Low density, high capacity pads that are flexible are generally thick and bulky. The absorbent pad 48 in *Laux et al.* may have a low density and may be twice as thick or even more than 10 times as thick as Appellants' absorbent pad.

Appellants' absorbent pad is thin (between 0.5 and 3.0 mm), has sufficient absorbent capacity (between about 14 and 40 g/g), and is flexible (edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression). These balanced properties are achieved through high levels of superabsorbent polymer (SAP) ***and high density compaction*** of the formed pads (page 13, lines 10-12).

*Laux et al.* fail to disclose an absorbent pad that is thin, ***flexible***, and possesses sufficient absorbent capacity. Additionally, *Laux et al.* fail to disclose an absorbent pad that is ***densified*** in any manner to achieve such thinness, flexibility, and

absorbent capacity. More particularly, *Laux et al.* fail to disclose any compaction or densification of the absorbent pad 48, or any treatments that would increase the flexibility of the absorbent pad 48. Thus, it is unlikely that a person skilled in the art would achieve Appellants' claimed densified, thin, flexible, absorbent pad through routine experimentation based on the teachings of *Laux et al.*

For at least the reasons presented above, Appellants respectfully request the Board to overturn this rejection.

## II. Claims 12-14 and 31-33 are non-obvious under 35 U.S.C. 103(a) based on the teachings of *Laux et al.* as applied to Claims 1 and 21 above, and further in view of *Coles.*

In the final Office Action, mailed 19 August 2005, the Examiner rejected Claims 12-14 and 31-33 under 35 U.S.C. 103(a) as being unpatentable over *Laux et al.* as applied to Claims 1 and 21 above, and further in view of *Coles*.

As explained above, *Laux et al.* fail to disclose or suggest a ***densified*** absorbent pad, particularly wherein the densification or compaction of the absorbent pad results in a density greater than about 0.28 or 0.30 grams per cubic centimeter and a thickness in a range of between 0.5 and 3.0 millimeters, and further fail to disclose or suggest an absorbent pad having an edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression. *Laux et al.* also fail to disclose or suggest such an absorbent pad wherein the superabsorbent material has a gel strength of at least 0.65.

Contrary to the Examiner's assertion, *Coles* fails to disclose or suggest a superabsorbent material for use in an absorbent pad having a gel strength of at least 0.65, or at least 0.75, or at least 0.85. Instead, *Coles* discloses absorbent gelling materials having an absorbent gel strength of more than 1.2 kPa after 5 minutes.

**The term "gel strength" is used to refer to a different material property in *Coles* than in the present invention.** *Coles* discloses a sanitary napkin that may include high gel strength absorbent gelling materials having an absorbent gel strength of more than 1.2 kPa after 5 minutes. Such absorbent gel strength, measured in kPa, is the measure of pressure or force against the gel, thus representing a

mechanical modulus. In contrast, the ranges of absorbent gel strength disclosed in the present invention are determined by dividing 0.9 AUL capacity by centrifuge retention capacity (CRC), which is essentially a ***ratio*** of the amount of liquid, i.e., saline, that the superabsorbent polymer (SAP) absorbed under no pressure versus the amount of liquid that the SAP absorbed under pressure. More particularly, the gel strength in the present invention involves an absorbency under load factor which is more related to in-use performance. Although the same term "gel strength" is used in both the present application and in *Coles*, these terms represent completely different measurements of material properties.

To establish a prima facie case of obviousness, the prior art references must disclose or suggest all the claim limitations. Neither *Laux et al.* nor *Coles*, alone or in combination, disclose or suggest a densified absorbent pad having an edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression, and including superabsorbent material having a gel strength of at least 0.65, wherein the gel strength is determined by dividing 0.9 AUL capacity by CRC.

The Examiner notes that Appellants' claims do not recite the method by which the gel strength is measured. Appellants' claims recite minimum gel strength values. The broadest reasonable interpretation of Appellants' recited gel strength values must take into account the units of these values. More particularly, since these values are ratios, the recited values have no units. In contrast, the gel strength values in the *Coles* reference have units of "kPa after 5 minutes." Without reciting in the claims the method by which the gel strength is measured, it should be apparent to a person skilled in the art that the gel strength values recited in Appellants' claims and the gel strength values recited in the *Coles* reference are not analogous because of the inconsistent units between these values.

For at least the reasons presented above, Appellants respectfully request the Board to overturn this rejection.

**III. Claims 37-39 are non-obvious under 35 U.S.C. 103(a) based on the teachings of *Laux et al.* as applied to Claim 21 above.**

In the final Office Action, mailed 19 August 2005, the Examiner rejected Claims 37-39 under 35 U.S.C. 103(a) as being unpatentable over *Laux et al.* as applied to Claim 21 above.

As explained above, *Laux et al.* fail to disclose or suggest a ***densified*** absorbent pad, particularly wherein the densification or compaction of the absorbent pad results in a density greater than about 0.28 or 0.30 grams per cubic centimeter and a thickness in a range of between 0.5 and 3.0 millimeters, and further fail to disclose or suggest an absorbent pad having an edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression. *Laux et al.* also fail to disclose or suggest any range of concentration variation of a superabsorbent material gradient within such an absorbent pad.

Since *Laux et al.* do not disclose or suggest a densified absorbent pad having an edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression, *Laux et al.* thus fail to disclose or suggest such an absorbent pad having any variation of concentration of superabsorbent material within a gradient in such an absorbent pad.

For at least the reasons presented above, Appellants respectfully request the Board to overturn this rejection.

**IV. Claim 57 is non-obvious under 35 U.S.C. 103(a) based on the teachings of *Laux et al.* as applied to Claim 1 above, and further in view of *Pieniak et al.***

In the final Office Action, mailed 19 August 2005, the Examiner rejected Claim 57 under 35 U.S.C. 103(a) as being unpatentable over *Laux et al.* as applied to Claim 1 above, and further in view of *Pieniak et al.*

As explained above, *Laux et al.* fail to disclose or suggest a ***densified*** absorbent pad, particularly wherein the densification or compaction of the absorbent pad results in a density greater than about 0.28 or 0.30 grams per cubic centimeter and a thickness in a range of between 0.5 and 3.0 millimeters, and further fail to disclose

or suggest an absorbent pad having an edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression. *Laux et al.* further fail to disclose or suggest such an absorbent pad having a higher basis weight in a first zone than in a second zone.

*Pieniak et al.* disclose an absorbent panel structure for a disposable garment that includes one or more longitudinally elongated areas or grooves of reduced thickness and basis weight formed in the panel. A rearward section of the panel has a mean basis weight that is less than the mean basis weight of the forward section of the panel.

*Laux et al.* and *Pieniak et al.*, in combination, fail to disclose or suggest all recited limitations of Claim 57. More particularly, neither *Laux et al.* nor *Pieniak et al.*, alone in combination, disclose or suggest a densified absorbent pad having an edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression, with a higher basis weight in a first zone than in a second zone.

For at least the reasons presented above, Appellants respectfully request the Board to overturn this rejection.

## 8. CONCLUSION

For the above reasons, Appellants respectfully submit that the rejections posed by the Examiner are improper as a matter of law and fact. Accordingly, Appellants respectfully request the Board reverse the rejection of Claims 1-39, 57, 58, 60, 61, and 63.

A check for the fee required by 37 CFR 41.37(a)(2) and 37 CFR 41.20(b)(2), updated pursuant to the Fiscal Year 2006 Fee Schedule, in the amount of $500.00, is attached hereto. Please charge any additional amount owed, or credit any overpayment, to Deposit Account 19-3550.

Respectfully submitted,

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## CLAIMS APPENDIX

1. An absorbent pad, comprising:

a single, densified layer including between 30 and 85 wt% superabsorbent material homogeneously mixed with between 15 and 70 wt% pulp fluff;

wherein the single-layer absorbent pad has been compacted to a density greater than about 0.28 grams per cubic centimeter and a thickness in a range of between 0.5 and 3.0 millimeters, and the single-layer absorbent pad also has an absorbent capacity between about 14 and 40 grams 0.9 w/v% saline solution per gram of absorbent pad and an edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression.

2. The absorbent pad of Claim 1, wherein the absorbent pad has a density greater than about 0.30 grams per cubic centimeter.

3. The absorbent pad of Claim 1, wherein the absorbent pad has a density greater than about 0.32 grams per cubic centimeter.

4. The absorbent pad of Claim 1, wherein the absorbent pad comprises between 40 and 80 wt% superabsorbent material.

5. The absorbent pad of Claim 1, wherein the absorbent pad comprises between 50 and 75 wt% superabsorbent material.

6. The absorbent pad of Claim 1, further comprising a plurality of man-made fibers.

7. The absorbent pad of Claim 1, further comprising a plurality of carrier particles.

8. The absorbent pad of Claim 1, wherein the absorbent pad is between 0.6 and 2.5 millimeters thick.

9. The absorbent pad of Claim 1, wherein the absorbent pad is between 0.7 and 2.0 millimeters thick.

10. The absorbent pad of Claim 1, wherein the absorbent pad has an absorbent saturation capacity between 16 and 40 grams 0.9 w/v% saline solution per gram of absorbent pad.

11. The absorbent pad of Claim 1, wherein the absorbent pad has an absorbent saturation capacity between 18 and 40 grams 0.9 w/v% saline solution per gram of absorbent pad.

12. The absorbent pad of Claim 1, wherein the superabsorbent material has a gel strength of at least 0.65.

13. The absorbent pad of Claim 1, wherein the superabsorbent material has a gel strength of at least 0.75.

14. The absorbent pad of Claim 1, wherein the superabsorbent material has a gel strength of at least 0.85.

15. An absorbent article comprising the absorbent pad of Claim 1.

16. A diaper comprising the absorbent pad of Claim 1.

17. A training pant comprising the absorbent pad of Claim 1.

18. A feminine hygiene product comprising the absorbent pad of Claim 1.

19. An incontinence product comprising the absorbent pad of Claim 1.

20. A swim wear garment comprising the absorbent pad of Claim 1.

21. An absorbent pad, comprising:

a single, densified layer including between 30 and 85 wt% superabsorbent material; and

between 15 and 70 wt% pulp fluff;

wherein the single-layer absorbent pad has been compacted to a density greater than about 0.30 grams per cubic centimeter and a thickness in a range of between 0.5 and 3.0 millimeters, and the single-layer absorbent pad also has an edge compression between about 2726 and about 3615 gm-cm of energy to 50% compression, and the superabsorbent material forms a gradient within the absorbent pad.

22. The absorbent pad of Claim 21, wherein the absorbent pad comprises between 40 and 80 wt% superabsorbent material.

23. The absorbent pad of Claim 21, wherein the absorbent pad comprises between 50 and 75 wt% superabsorbent material.

24. The absorbent pad of Claim 21, further comprising a plurality of man-made fibers.

25. The absorbent pad of Claim 21, further comprising a plurality of carrier particles.

26. The absorbent pad of Claim 21, wherein the absorbent pad is between 0.6 and 2.5 millimeters thick.

27. The absorbent pad of Claim 21, wherein the absorbent pad is between 0.7 and 2.0 millimeters thick.

28. The absorbent pad of Claim 21, wherein the absorbent pad has an absorbent saturation capacity between about 14 and 40 grams 0.9 w/v% saline solution per gram of absorbent pad.

29. The absorbent pad of Claim 21, wherein the absorbent pad has an absorbent saturation capacity of at least 16 grams 0.9 w/v% saline solution per gram of absorbent pad.

30. The absorbent pad of Claim 21, wherein the absorbent pad has an absorbent saturation capacity of at least 18 grams 0.9 w/v% saline solution per gram of absorbent pad.

31. The absorbent pad of Claim 21, wherein the superabsorbent material has a gel strength of at least 0.65.

32. The absorbent pad of Claim 21, wherein the superabsorbent material has a gel strength of at least 0.75.

33. The absorbent pad of Claim 21, wherein the superabsorbent material has a gel strength of at least 0.85.

34. The absorbent pad of Claim 21, wherein the absorbent pad includes more superabsorbent material at a first end than at a second end opposite the first end.

35. The absorbent pad of Claim 21, wherein the absorbent pad includes more superabsorbent material along a top surface than along a bottom surface.

36. The absorbent pad of Claim 21, wherein the absorbent pad includes more superabsorbent material along a bottom surface than along a top surface.

37. The absorbent pad of Claim 21, wherein a concentration of the superabsorbent material varies throughout the gradient by about 0.01 to about 0.40 grams per cubic centimeter.

38. The absorbent pad of Claim 21, wherein a concentration of the superabsorbent material varies throughout the gradient by about 0.05 to about 0.35 grams per cubic centimeter.

39. The absorbent pad of Claim 21, wherein a concentration of the superabsorbent material varies throughout the gradient by about 0.15 to about 0.25 grams per cubic centimeter.

57. The absorbent pad of Claim 1, wherein the absorbent pad has a higher basis weight in a first zone than in a second zone.

58. The absorbent pad of Claim 1, further comprising a wrap material encompassing the single-layer absorbent pad.

60. The absorbent pad of Claim 1, wherein the single-layer absorbent pad is formed to a specific shape.

61. The absorbent pad of Claim 21, further comprising a wrap material encompassing the single-layer absorbent pad.

63. The absorbent pad of Claim 21, wherein the single-layer absorbent pad is formed to a specific shape.

## EVIDENCE APPENDIX

Appellants are not submitting any extraneous evidence with this Appeal Brief.

## RELATED PROCEEDINGS APPENDIX

Appellants are not aware of any related appeals or interferences with regard to the present application.